

ABSTRACT

An improved electric solenoid for providing linear mechanical actuation. The outer polepiece of the solenoid is provided with an axial, self-lubricated, non-magnetic bearing for closely supporting and centering an actuating shaft extending coaxially from the solenoid armature. Preferably, the radial tolerance between the diameters of the bearing inner bore and the shaft is as small as in practically possible without inducing drag of the shaft in the bearing, permitting reduction of the air gap between the armature and the polepieces to a minimal thickness. Preferably, the armature is axially tapered to avoid contact of the armature with the polepieces as a result of residual tolerances between the bearing and shaft. A significant increase in actuating force is realized in comparison with a prior art solenoid, and the improved solenoid may be used in any desired orientation.